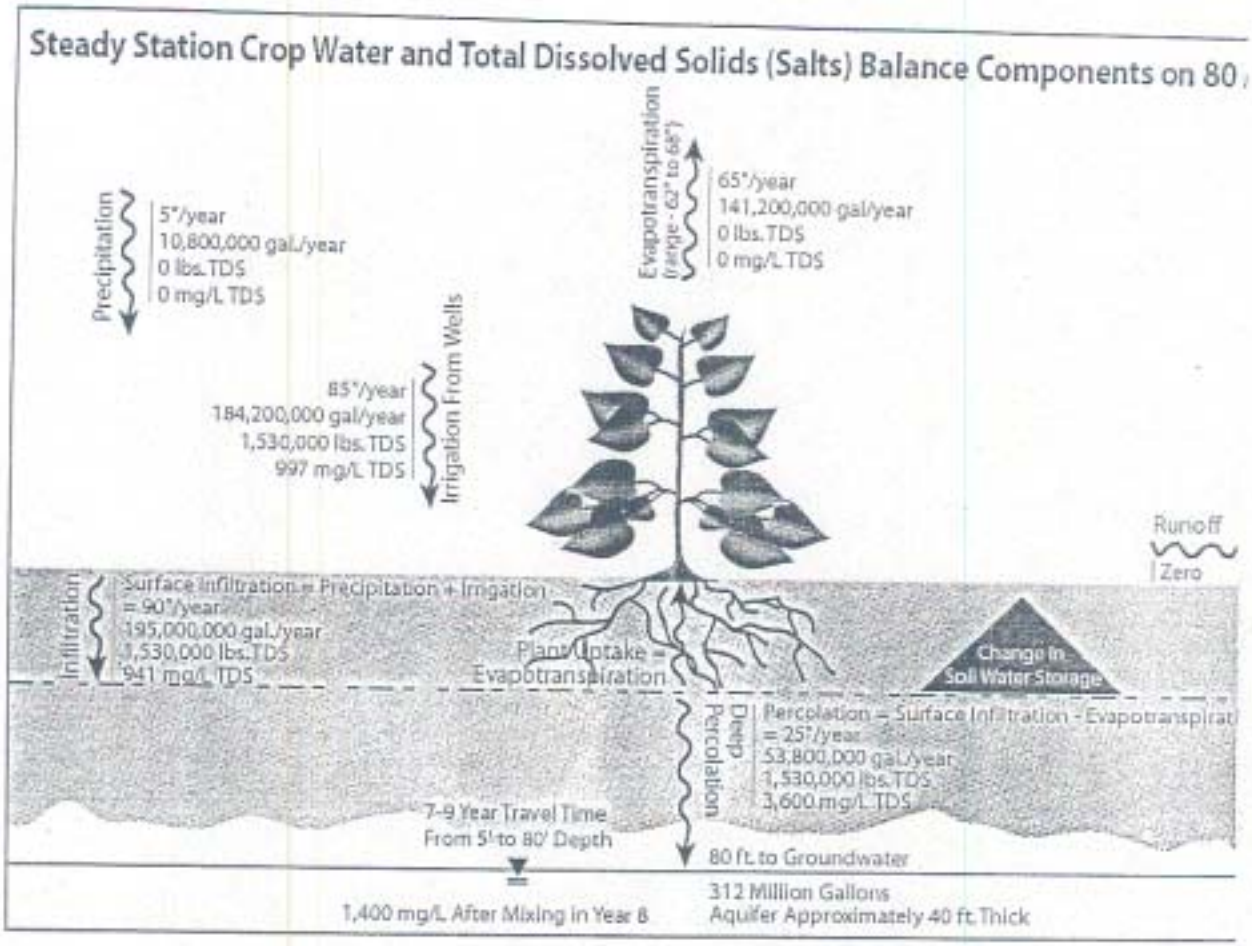
From: Robert Dodds
To: Landau, Ken
Date: 11/9/04 11:48AM
Subject: Dairies permit

Ken - We have a handful of diaries in Region 6 that have already polluted the GW, so I'm interested in what you and region 8 are coming up with in the way of controls in your CAFO NPDES permits. Therefore, I was looking on your web page and found your tentative permit. From our battles with the Los Angeles County San Districts in the last year we have learned a bit about crop nutrient uptake, so for what's it worth, I offer the following: I see that you use the term, "agronomic loading rates" in your Nutrient Mngt Plan (Attach D to your permit). I recommend that your define the term in your Definitions (Attachment F) if you are going to keep the term in the permit or attachment. It really means different things to different folks. EPA has a defn of Agronomic Rate: "Agronomic rate- The whole sludge application rate designed to (1) provide the amount of nitrogen needed by a crop or vegetation grown on the land and (2) minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water."SOURCE: http://www.epa.gov/owm/mtb/biosolids/sludge.pdf Land Application of Sewage Sludge: A Guide for Land Appliers on the Requirements of the Federal Standards for the Use or Disposal of Sewage Sludge, 40 CFR Part 503 I realize that in some of your locations, your GW may be so deep that percolate is not getting down to it, or the GW is of poor quality already. However, for the areas where the GW can be impacted, it may be a situation similar to what we have encountered. We have learned that it's not just the nutrient needs of the plants (often interpreted by AG folks as the "agronomic rate") that is important for GW quality protection. It's really (1) the amount of of water that is applied to the land that carries the dissolved salts (especially nitrates) down beyond the root zone and to the GW, and (2) the nitrate or salt conc of the pore water that is moving beyond the root zone to GW. Also, FYI, attached are a couple of diagrams that we found useful in showing what ends up in the GW from agricultural reuse sites. Bob

==========
Robert S. Dodds, PE
Assistant Executive Officer & Ombudsman
Lahontan RWQCB
530/542-5410
Fax 530/544-2271
email: rdodds@waterboards.ca.gov
==========

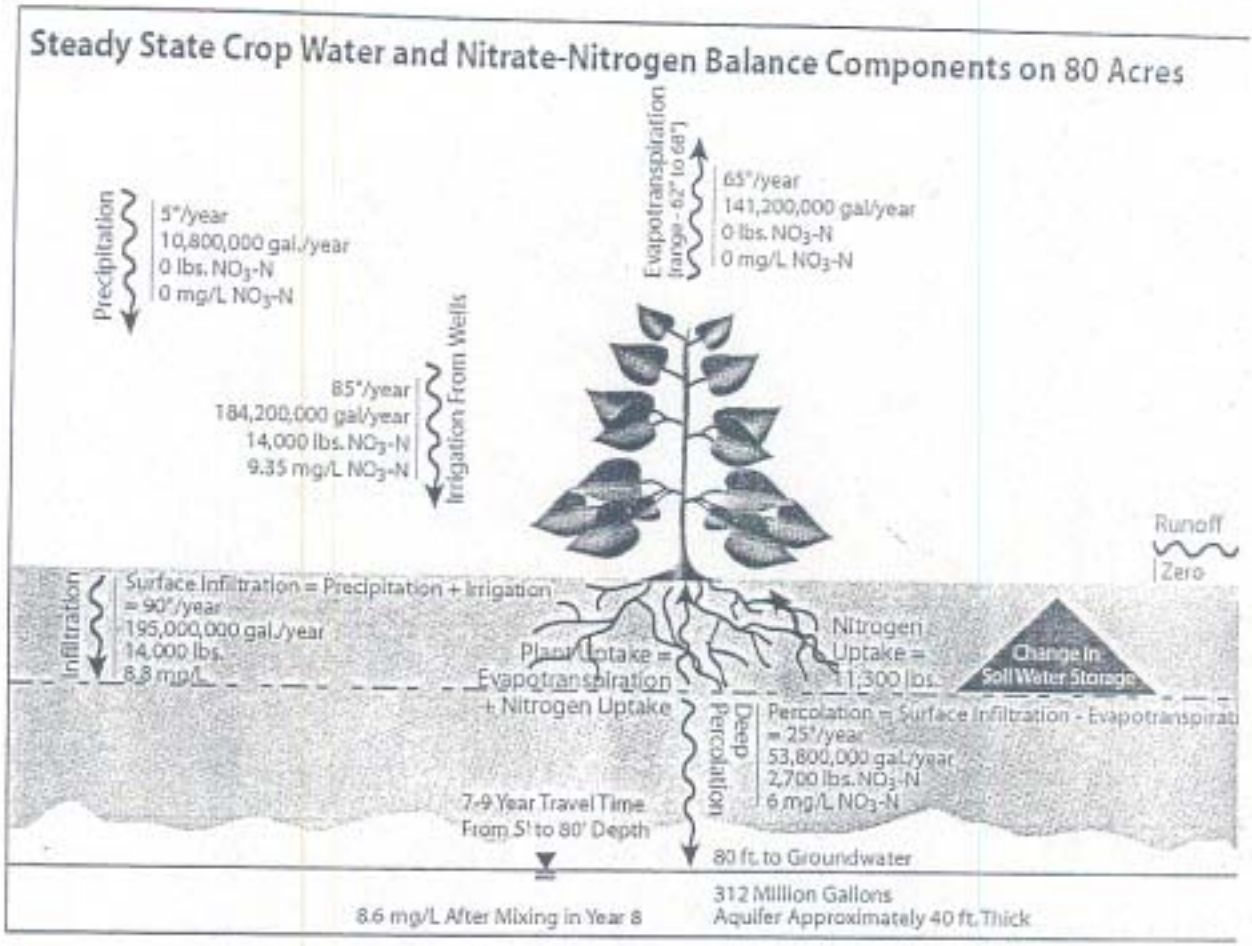
CC: Loncarovich, Richard

A188


Steady Station Crop Water and Total Dissolved Solids (Salts) Balance Components on 80
Precipitation
5"/year
10,800,000 gal./year
0 lbs. TDS
0 mg/L TDS
Evapotranspiration
(range - 62" to 68")
65"/year
141,200,000 gal/year
0 lbs. TDS
0 mg/L TDS
Irrigation From Wells
85"/year
184,200,000 gal/year
1,530,000 lbs. TDS
997 mg/L TDS
Runoff
Zero
Infiltration
Surface Infiltration = Precipitation + Irrigation
= 90"/year
195,000,000 gal./year
1,530,000 lbs. TDS
941 mg/L TDS
Plant Uptake =
Evapotranspiration
Change in
Soil Water Storage
Percolation
Deep
Percolation = Surface Infiltration - Evapotranspirat
= 25"/year
53,800,000 gal./year
1,530,000 lbs. TDS
3,600 mg/L TDS
7-9 Year Travel Time
From 5' to 80' Depth
80 ft. to Groundwater
1,400 mg/L After Mixing in Year 8
312 Million Gallons
Aquifer Approximately 40 ft. Thick

DPIA

A189


Steady State Crop Water and Nitrate-Nitrogen Balance Components on 80 Acres
Evapotranspiration (range = 62" to 68")
65"/year
141,200,000 gal/year
0 lbs. NO3-N
0 mg/L NO3-N
Precipitation
5"/year
10,800,000 gal./year
0 lbs. NO3-N
0 mg/L NO3-N
Irrigation From Wells
85"/year
184,200,000 gal/year
14,000 lbs. NO3-N
9.35 mg/L NO3-N
Runoff
Zero
Infiltration
Surface Infiltration = Precipitation + Irrigation
= 90"/year
195,000,000 gal./year
14,000 lbs.
8.8 mg/L
Plant Uptake =
Evapotranspiration
+ Nitrogen Uptake
Nitrogen
Uptake =
1,300 lbs.
Change in
Soil Water Storage
Deep
Percolation
Percolation = Surface Infiltration - Evapotranspirati
= 25"/year
53,600,000 gal./year
2,700 lbs. NO3-N
6 mg/L NO3-N
7-9 Year Travel Time
From 5' to 80' Depth
80 ft. to Groundwater
8.6 mg/L After Mixing in Year 8
312 Million Gallons
Aquifer Approximately 40 ft. Thick

A190